Troubleshooting Corrugating adhesive
Adhesive Characteristics Troubleshooting

Solids

Too high
• Water meter reading faulty
• Too much starch in the recipe

Too low
• Water meter reading faulty
• Insufficient starch in the recipe.
• To some degree, low solids can be attributed to presence of bacteria in the system
Adhesive Characteristics Troubleshooting

Gel Temperature Too high
- There may not be enough heat to gelatinize all the starch granules.
  
  This will result in:
- A white glue line
- Poor bonding
- Low machine speeds particularly with DWB
- Dry end operators will notice Wet OR Soft board coming off the corrugator.

Causes
- Not enough caustic in the batch
- New caustic supply – not the same strength
- Dry caustic has been allowed to stand in open and picks up water from the air.
- Liquid caustic (45 – 50%). Precipitation has occurred.
Adhesive Characteristics Troubleshooting

Gel Temperature Too low

- Adhesive will gel before it has a chance to penetrate into the paper
- Result in brittle board
- Dry board
- Raspy-feeling glue lines
- Cracking board
- Severe gelling in the pans

Causes

- Too much caustic in the batch
- Starch solids decreased without decreasing caustic
- Highly concentrated liquid caustic
Adhesive Characteristics Troubleshooting

Viscosity Too high

- At completion of batch
  - Not enough volume of water
  - Batch did not finish to correct volume
  - Too much starch in the primary stage
  - Agitation period not long enough
  - Viscosity cup orifice may be blocked thus giving false readings.

- Increase in storage tanks
  - Agitators in tanks not turned on
  - Caustic content too high causing raw starch to swell.

- Increase overnight or weekends
  - Ambient temperature drops and there is no agitation.
Adhesive Characteristics Troubleshooting

Viscosity Too low

• At completion of batch
  – Too much water added
  – Not enough starch in primary stage
  – Agitation period too long

• Decrease in storage tank during run
  – Dirty lines
  – Pans cleanup water allowed to return to storage
  – Water being accidently added to sump tank
  – Steam leaks at around the S/F allow condensate to drip in starch pans

• Decrease overnight or weekends
  – Bacteria action
  – Use of flexo wash up or process water requires additional preservative.
Viscosity Loss (Other causes)

- Temperature
- Shear
- Time
- Bacteria
- Excess water
- Primary starch
- Resin
NB: As the temperature of the adhesive increases (gets more hot); the viscosity of the adhesive decreases (THINNER) and visa versa.
Temperature – Viscosity Correction Table

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VISCOSITY LOSS (bacteria)

Starch is attacked by bacteria breaking it into smaller fragments (dextrin's). These fragments dissolve in water, lowering the viscosity of the adhesive.

Bacteria Source

- dirty storage tanks
- dirty lines
- recycled water
- air leaks
Microbial Degradation (Prevention)

- Minimize the amount of adhesive stored for long periods of time
- Use a preservative during shut-down i.e. weekends and long holidays
- Clean complete system with TSP or HTH and bleach every six months
VISCOSITY LOSS (excess water)

• Two sources
  - Excess water in the current formula
  - Unwanted source (leaks)
• Excess water effects
  - Dilute the adhesive
  - Lower the solids
  - Increases susceptibility to shear
VISCOSITY LOSS (primary starch)

- Cook temperature too hot
- Not enough primary starch
- Excessive shear in the primary mix
  - agitation too long
  - pump over step
VISCOSITY LOSS (resin relationship)

- A resin creates a chemical reaction when the adhesive is heated on the corrugator.
- The result produces a water resistant bond. The degree of WR is related to the ratio of resin solids to starch.
- A batch with resin MUST be used as soon as possible e.g. within 8 hours.
- After that, the resin loses the ability to react with the starch and viscosity breakdown begins.
FOR MORE INFORMATION PLEASE CONTACT GODFREY MAMBA